

## ESP AND THE INVERSE SQUARE LAW

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It has often been claimed that if the results obtained by Professor Rhine and his colleagues are not illusory, the agency of transmission involved in ESP must be of a type quite unlike the simple radiations familiar to physicists. In his interesting article<sup>1</sup> "A Theory of Extra-Sensory Perception" Professor Reiser states the argument clearly in the following words<sup>2</sup> (the italics are mine):

"In experiments where subjects were set to the task of calling cards at a distance of several hundred miles the results --- indicate that the ordinary laws of radiation do not hold, and this suggests that a non-radiant energy is at work in ESP. --- If Dr. Rhine's results are valid, they *necessitate* the acceptance of a kind of energetics not limited by the customary inverse-square law, i.e. there is no decrease of effectiveness of extra-sensory perception with increase of distance, as is the case for known energies."

In the present note I wish to show that this particular deduction is without foundation. I do not wish to imply that the agency of transmission involved in ESP must after all necessarily obey the familiar inverse square law, but simply that it is impossible, on the basis of the available evidence, to draw any definite conclusion as to whether the agency of transmission obeys this law or not.

The basis of the deduction made by Professor Reiser, and by many before him, is the experimental evidence which indicates that ESP is substantially unaffected by distance. For the purpose of argument we shall assume that the experimental results are valid. We are not concerned here with the question of their validity, but solely with the problem of their interpretation if they are valid.

To deduce from these experimental results that the agency of transmission of ESP cannot lose intensity

in proportion to the inverse square of the distance from the source would be fallacious. The fallacy rests to a large extent upon a confusion of the two quite different concepts *intensity* and *intelligibility*.

A simple example will serve to expose the weak places in the argument. It is readily admitted that the intensity of light falls off as the square of the distance from its source. But this does not at all imply that there is a corresponding falling off in the *intelligibility* of, say, an advertisement written in the sky with smoke from an airplane. On the contrary, the advertisement can be read with substantially equal facility over a wide range of distances. And, in fact, if one should approach quite close, as the sky-writing aviator must, one would find that the intelligibility rapidly *decreased*. The relationship between intensity and intelligibility is evidently no simple one.

The illustration of the sky-writing is made even more pertinent by the fact that as the light waves become attenuated with increasing distance the solid angle subtended at the eye by the sky-writing also decreases, and by precisely the same inverse square law, with the result that the apparent brightness to the eye remains constant. This is a well known law of optics, and illustrates one way in which the effects of the inverse square law can be very effectively masked.

Let us take another example, illustrating a somewhat different possibility. Consider two radio stations having the same power, one close by and the other far distant. The signals from the latter will be much weaker than those from the former.<sup>1</sup> But modern radio receivers are equipped with a device known as "automatic volume control" which brings in stations, within wide limits, at approximately the same volume. When the receiver is tuned to the distant station the automatic volume control acts so as to compensate for the weak intensity of the signals by automatically providing the extra amplification needed to bring the volume to the level determined by the hand operated volume control, and the distant station comes in with approximately the same loudness as

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1. Owing to the existence of reflecting layers in the upper atmosphere, the law of attenuation of radio signals is, in practice, quite different from the normal inverse square law. However since the intensity of signals does decrease with increase of distance the analogy remains sound.

the nearby one. Thus in modern radio sets the attenuation of signal strength due to distance is effectively masked.

Moreover, still keeping to the radio analogy, even if we turn down the hand operated volume control to reduce the volume to a whisper, or turn it up to a roar, we can still make out the news bulletins with substantially uniform success. Within wide limits their intelligibility is little affected by their intensity.

In estimating the significance of Rhine's distance experiments there are thus two major factors to be considered, at the least. One is the possible existence within the ESP recipient, or outside him, of an automatic compensating device which may effectively mask variations of intensity over a wide range of intensities, and the other is the very great difference between intensity, whether objective or subjective, and intelligibility.

It is not unreasonable to suppose that the human recipient of ESP impulses should find these two factors operating to mask the effects of distance. As to "automatic volume control", does not the eye possess an iris to compensate for variations in brightness over a wide range? The ear, too, is equipped with a mechanism which compensates for variations in loudness. And coming closer to the possible seat of the ESP faculty, the realm of the mind and the emotions, we may point out that the intellect is well protected against the sudden impact of novel and startling ideas, as every ESP worker soon learns, while the human conscience, like the sense of smell, is to a notorious extent adaptable to the exigencies of the moment. It seems more than likely, therefore, that the ESP faculty is endowed with a similar automatic adaptability to extremes of intensity. Indeed it would be rather unreasonable to suppose the contrary, since automatic control mechanisms of this sort serve the important biological function of preventing injury to the organism.

The vital importance of the concept of intelligibility, as contrasted with intensity, in the interpretation of the Rhine distance experiments, is beyond question. One has but to recollect that it is possible to read a billboard with equal facility from near and far, and to understand a speech just as well, or should we perhaps say just as little, from the rear of a hall as from the front.

I submit, therefore, that the problem of the nature of the transmission agency of ESP is an open one. Until a method is discovered for measuring its objective intensity, as distinguished both from its subjective intensity and from the intelligibility of its message, the question seems unlikely to receive a definite answer. So far as present knowledge is concerned, no valid deduction seems permissible concerning the mathematical laws governing the propagation of the ESP impulses.

#### REFERENCES

- (1) *Jour. Parapsychol.*, 1939, 3, 167-193
- (2) p. 178.